

Pacific Discovery



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Joseph R. Slevín • *Harry C. James*

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In This Issue

The Buffalo Roamed All Gaul—this handsome animal is from an engraving in a 1753 edition of Caesar's Commentaries. Translated into English by William Duncan, professor of philosophy in the University of Aberdeen, the quarto edition is a collector's item of note. This engraving is particularly rare since in most copies of the work the scarce folding "buffalo plate" is missing. Reproduced from a copy owned by Mr. A. J. Scampini of San Francisco Cover

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Pre-Discovery

No end to some roads, apparently—here's the Guaymas road again. Recalling Don Simpson's story (Nov.-Dec. 1949) in which the Steinhart Aquarium collector said nothing good about that "road" over the Sonora desert, and the subsequent protest we got from a reader who'd been down that way some time after Don, we quote a note from Don (Guaymas, March 7): "It's a breeze! . . . paved, all 254 miles of it, from the border right to Miramar Beach. The *arroyos* are *seco* and, more important, all bridges and culverts are completed; and not a DESVIACION was encountered! In fact, "Bringing Them Back Alive" would be a pleasure—now . . .

"Best of all, I don't *have* to catch a fish for two weeks. But you must excuse me now while I shag over to the inlet, where the tide is running out, while I just check and make sure there isn't a seahorse waiting there to be caught . . ." (There was; the Simpsons roped a few; they now browse in a Steinhart tank.)

"Some mountaineers develop a special affection for a particular mountain, but I have never heard of a glaciologist falling in love with a glacier." Glaciologist Oliver Kehrlein begins "Death Comes to a Glacier" thus, next issue, then proceeds to prove rule by exception—himself. ". . . Last summer I saw a pocket-sized glacier, a dirty little patch of ice, which, in its dying gasps, told me the story of its past four thousand years as a solitary glacier, and of the minor role it had played, as the spearhead of a glacial system, in the dramatic evolution of our Sierra . . . It came as an unexpected surprise, in a location where it was believed a glacier could not exist." A few weeks later, where Mount Rainier thrust "an ice-clad summit into the blue of an Indian Summer sky," came another glacial discovery: this country's largest ice cavern. Merlin K. Potts, assistant park naturalist of Mount Rainier National Park, reports it. We trust this icy issue will be warmly received.

Discovering PD's Authors

It's becoming a habit: every year we go down into a can-

yon with Philip Ferry. First year, Havasu; next, Rainbow Bridge in deep-cup Bridge Canyon. This year we "Return to Thunder River," across Grand Canyon from the walled-in home of the Havasupai. While some Sierra Clubbers specialize in first, second, or nineteenth ascents, "Joe" Ferry and his photographer-podner Al Schmitz seem to prefer *déscents* (in all our Grand and other canyon climbing it was the ascent we remembered longest, with a tired feeling in the shanks).

About ten years ago a University of Chicago graduate student from Denver was deep in the Newberry Library making a file for a series of papers on Western artists. One sub-head was "Buffalo." The war got him out of the stacks, into the Pacific via the Coast Guard, finally back to Denver. Last fall Benjamin Draper joined the C.A.S. staff in a public relations capacity, bringing his files with him. Being inclined to old books, prints, and such, he quickly discovered our own library's richness in Western Americana. One thing led to another—the Bancroft Library of the University of California, the De Young Museum, Sutro Library, private collections in San Francisco. Before you could say "Where the Buffalo Roamed" backwards without slipping, Ben had run down the material which furnished the present article. It's a new kind of "Discovery" in PD.

Author of the *Log of the Schooner "Academy" on a Voyage of Scientific Research to the Galapagos Islands 1905-1906*, curator of herpetology in the C.A.S., Joseph R. Slevin is our unofficial historian and archivist. He slants particularly toward Pacific Ocean exploration, specializing in the history of discovery with reference to the Galápagos. That "Post Office in a Barrel" played a part in history.

Harry C. James' call to "Act Now to Save San Jacinto" comes, in our pages, very close to the deadline (we've had unforeseen production delays). So his "now" means NOW—not tomorrow. Read at once—write that letter. For the full story see his "The San Jacinto Winter Park Summer Resort Scheme" in *The Living Wilderness*, Winter 1949-50. Mr. James is president of the Federation of Western Outdoor Clubs. D.G.K.

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Star Dust

ON THE EVENING of October 9, 1946, there occurred a shower of meteors, the most spectacular thus far in this century, as the earth passed through the wake of the Giacobini-Zinner comet. Shortly thereafter three objects were brought to the California Academy of Sciences for identification. One had been picked up on the top of Mt. Diablo, and the other two had come from the shore of Lake Tahoe where, it was alleged, they had "fallen on the snow." The finders in each case believed the objects to be meteorites that had struck the earth during the Giacobinid shower.

It was clear that the specimens were not meteorites; but what were they? They were submitted to a number of able astronomers and to equally competent geologists. The experts shook their heads. There were clearly two kinds of materials present, but nobody could recognize either of them. The only helpful suggestion was that we subject them to spectrum analysis.

While this was pending the Academy's scientific staff acted on a couple of hunches that rendered spectrum analysis unnecessary. The specimen from Mt. Diablo turned out to be a fragment of bone from some large mammal (probably a cow or horse) that had been rounded by weathering and erosion until it had lost all semblance of its original form. The two objects from Lake Tahoe proved to be a commercial insulating material presumably used in constructing a new house in that vicinity. The astronomers and geologists, far from appearing ridiculous, in fact gained in stature because they refused to guess at its identity. It is a new material, manufactured by a synthetic process, and it quite literally resembles nothing in the heavens above nor the earth beneath. However, the mystery was dispelled, and nobody any longer supposes that these curious objects came from interstellar space.

We have cited this series of events in some detail for several reasons. First it illustrates an ancient and very common fallacy, one that is still known by the Latin name it had acquired before English became a language, the fallacy of *post hoc, ergo propter hoc*—because something happened after something else, therefore it was the direct result of the thing that happened earlier. If no meteor shower had occurred, no one would ever have suspected the objects mentioned above of being meteorites; but because there had been a meteor shower, every unusual finding for several weeks after was automatically attributed to it. Second, it shows the general tendency of mankind to leap to conclusions, and to believe anything that is exciting or out of the ordinary. Finally, it

demonstrates the persistent tendency of science to doubt the extraordinary or the unusual, and to come up with simple, straightforward and verifiable explanations of supposedly strange or remarkable events.

The human mind has an apparently inexhaustible tendency to believe the unusual, the improbable, the fantastic, the bizarre. Twice within recent years we have had, via the radio, visitations of men from Mars, with results almost as startling as if the men from Mars had actually arrived. In North America, where people are used to being excited all the time about nothing in particular, the incident passed with little more than congestion of the telephone service, some headlines in the newspapers, and a momentary apotheosis of Orson Welles. In South America, where people take their excitement seriously, the disillusioned customers gathered round and took the radio station apart.

Last year a writer in *Argosy* developed the theory that ice, accumulating on the Antarctic continent, is causing the earth to wobble on its axis, and will presently capsize the world with disastrous consequences. The remedy suggested was to use atomic energy to melt the ice. In 1949 we also had the usual epidemic of flying saucers.

Comes now, in the opening months of 1950, a Dr. Velikovsky who, as reported in *Harpers, Collier's*, and *The Reader's Digest*, believes that around 1500 B.C. a comet passed close to the earth, whisking its tail across our planet and producing a rain of fine, rusty pigment that turned the rivers to blood (Exodus, 7:17-21). Fifty-two years later the comet returned and its head approached the earth, slowing down or stopping the rotation of the planet, and causing the sun to stand still while Joshua smote the Amorites (Joshua, 10:12-13). Thereafter the comet, having had its fling, settled down and became the planet Venus.

As journalists and publishers we shall be interested to see how *Amazing Stories* is going to meet this sudden competition from an unexpected source. As builders of a planetarium to be opened in 1951, we desire to state that we are not devising any mechanical arrangements to show the planet Venus as having been born a few hundred years ago as the daughter of an irresponsible comet. As purveyors of scientific information to an intelligent reading public, we take this opportunity to express our opinion that Dr. Velikovsky's views are unsupported by scientific evidence, incompatible with scientific knowledge, and are mere idle conjectures incapable of proof—in other words, twaddle.

We have read these recent articles with a curious feeling of unreality, a feeling as of reading in a dream. It seems unbelievable that, in the middle of the twentieth century, we should find this kind of nonsense being published in leading magazines with the apparent expectation that it is to be taken seriously. When and if one reads *Amazing Stories* or *Superman Comics*, he does so in the knowledge that the events reported are purely fictional—unless he has the I. Q. of a Li'l Abner. But in the case of Dr. Velikovsky we find comparable material being presented as the alleged product of scientific scholarship.

It may not be amiss to record some of the thoughts that came to us as we pondered this phenomenon. We considered the possibility that the whole thing might be a literary hoax, that Dr. Velikovsky might be an imaginary character dreamed up and promoted by some ingenious writer. There is plenty of precedent. Daniel Defoe was a past master at writing fiction in the guise of fact, and we have other examples as recent as *The Cradle of the Deep* and *The Cruise of the Kawa*. It is to be noted that the articles thus far published are *about* Dr. Velikovsky, not *by* him. However, there appears to be evidence that he really exists. *Collier's* has published his picture, and Macmillan is going to publish his book.

We considered then the possibility that the matter might be a scientific hoax, that Dr. Velikovsky—who is stated to be, among other things, a psychiatrist—might be trying to see how tall a tale he could tell and get people to believe it—a kind of sardonic experiment in human gullibility. This may not be a very charitable view; but, on the other hand, to assume that Dr. Velikovsky really believes the statements attributed to him is not very charitable either.

We do not hold the publishers entirely blameless for foisting this kind of material on an unsuspecting public. It is true that a publisher is not, generally speaking, responsible for the opinions

expressed by authors. But we do expect a certain amount of screening. It seems reasonably clear that the publishers did not obtain the advice of qualified authorities, or that if they sought such advice they didn't take it.

Collier's states, in a masterpiece of ambiguity, "Although the theories Dr. Velikovsky expresses are certain to provoke debate, prominent scientific and religious leaders have found them most extraordinary." *Harper's* goes overboard to describe Dr. Velikovsky as a "universal scholar," and *Reader's Digest* is hardly less lyrical. The impression is thus created that his theories are being taken seriously by leading scientists and theologians. But the only scientific authorities cited are the Curator of the Hayden Planetarium and the science editor of the New York *Herald Tribune*, and the only theologian is the Reverend Norman Vincent Peale who, after a kind but cautious word, concludes very sensibly that the Bible is a volume of spiritual law, and that its truth does not depend on any "wonder" happening.

On the other hand, Professor Harlow Shapley, director of the Harvard observatory and a past president of the American Association for the Advancement of Science, has been quoted by *Science Service* as having termed Dr. Velikovsky's astronomical theories "rubbish and nonsense." He says there are written records of the planet Venus hundreds of years prior to 1500 B.C., and that Venus has a mass approximately a million times as great as any comet. The publishers could have learned Professor Shapley's views in advance instead of waiting to read them in the papers. The cost of a telephone call from New York to Cambridge, Massachusetts, is only ninety-five cents.

It is not our intention to equate Professor Shapley with American science. We shall not even call him a "universal scholar" although he is an extremely learned and able man. But as between the views expressed by Professor Shapley and those of Dr. Velikovsky, there is no question where the



"Meteorites" brought to the Academy following the meteor shower of October 9, 1946. The specimen on the left is a piece of bone, considerably weathered. The other is a fragment of "Foamglas," a commercially manufactured insulating material.

FROM THE READER

Tioga—Yosemite's Problem Road

EDITOR, *Pacific Discovery*

SIR:

Congratulations on Mr. Bradley's article about the Tioga Road problem. . . . We need more work of this kind.

LELAND D. FOSTER

Imperial, California, 14 February 1950.

SIR:

. . . The cover on my *Pacific Discovery*—Dr. Bradley is referred to as Professor Emeritus and that picture looks as though there might be a story in connection with it. I'm several years away from joining the retired class and I don't have any confidence that I'd be able to reach the position from which this picture was taken—is there a road just behind the camera—or is Dr. Bradley possessed of a very sound heart? I hoped you'd say on the editorial page but I don't find anything there. If Professor Emeritus Bradley can cruise around in that kind of country at the season depicted by the picture I'd like to hear how, where, and when he does so—in *Pacific Discovery*!

CHAS. H. QUIBELL

Professor of Botany

P.S. I agree with the No. 2 alternative in his article!—but what chance? Did you know that a trans-Sierran highway is now being built in Madera County? I've seen no

mention of it in the Press but a friend of mine has been on the completed portion!

C. H. Q.

Fresno State College, California, 4 March 1950.

Dr. Bradley's reply follows. He and three of his sons recently discharged from service were spending the winter in the Tioga-Tuolumne country, based in cabins they had stocked with food and fuel the winter before.

The cover shows the view one gets from the "saddle" of the Unicorn, early in March, looking southwest. It was taken by Bill Bradley, one of my three companions, as we munched our noonday crackers and cheese. There is indeed a road behind the camera—three days skiing away, at the mouth of Leevining Canyon. In summer, however, the road comes within three miles of this spot, as it skirts Tuolumne Meadows.

As for the heart—when the snow is right, travel by skis is less fatiguing than afoot in summer over the same terrain. For one thing, the effort is divided between legs, arms, and back when skiing. For another, in mountain skiing half the distance is up, the other half down. The downhill half of the day's travel on skis can be relaxing and restful, with gravity doing the work. In summer, down-grade travel is frequently quite as exacting and fatiguing as moderate climbing. In winter there are no talus slopes, no rolling stones, down timber, snags, or brush to fight.

(Continued on page 32)

vast majority of American scientists will stand. This is not because they are stubborn or dogmatic or have closed minds or don't want a new-comer muscling in on their racket. It is because Dr. Velikovsky is working scientific method in reverse gear. He assumes the thing to be proved and then tries to invent a plausible explanation.

How does he know that a comet passed close to the earth around 1500 B.C.? Assuming that one did, how does he know its tail consisted of fine, rusty pigment? In a different connection the comet's tail is referred to as gaseous. Assuming that this particular comet's tail was made up of fine, rusty pigment, how does he know this material drifted to earth instead of being completely oxidized in the upper atmosphere? Assuming that it reached the earth, how does he know it would kill fish, cause the rivers to stink, produce boils, and initiate the ten plagues of Egypt? How does he know that carbohydrates were, or could be, synthesized in the atmosphere to fall as manna? Any chemist will tell you that synthesizing carbohydrates is quite a trick. One could go on and on with questions of this sort, but what's the use? Don Quixote demonstrated the futility of tilting against windmills.

Dr. Velikovsky's method is something like this: He digs around in ancient myths and legends, compares them with Hebrew and other scriptures, and finds certain common elements. Then he

thinks up a scientific, quasi-scientific or wholly imaginary explanation that fits the story. By the same procedure one could prove that dragons formerly roamed over Europe and Asia, because they are featured in Chinese literature and art, they are mentioned eleven times in the Bible, they are discussed by Pliny and Olaus Magnus, and the British still celebrate St. George's Day. One could prove that human beings have been turned into pigs, because this is described in the "Odyssey" and in "Alice in Wonderland." One could prove that giants were formerly quite abundant, because they are mentioned repeatedly in the Hebrew Scriptures, by Homer, Hesiod, Pliny, and St. Augustine, in Grimm's fairy tales, and in "Jack and the Beanstalk." We are tempted to include Paul Bunyan, but perhaps he needs to be aged in the woods a few more generations before he attains the status of a "scientific" theory.

Doubtless there can be a science of mythology—the brothers Grimm, Sir James Frazer and others have made a start in that direction—and this writer would be the last to deny that there is a mythology of science. But on the whole, and as far as possible, we think that science and mythology had best be kept in separate categories.

Science has been defined as organized knowledge. We should like to amend that definition. Science is organized knowledge plus applied common sense.

R.C.M.



Few persons visit the far western limits of Grand Canyon National Park. Bob Cassel of the author's party stops, on the return to Thunder River, for the view across the Canyon to the South Rim.

PHILIP FERRY

Return to Thunder River

NOT MORE THAN FIFTY PERSONS are known to have gone down into Thunder River Canyon before the spring of 1948. Of these, one was Hade Church, commercial packer and guide who now takes private fishing parties into the canyon. Others included Ranger R. E. Laws of the National Park Service, and Jonreed Lauritzen, a writer on the Southwest. The rest were local fishermen.

The idea of our expedition to Thunder River was born in 1946. Al Schmitz and I had made an exploratory trip into Havasu Canyon, that isolated Indian retreat lying deep in a side cleft of the Grand Canyon system. Afterwards we had dropped in on Dr. Harold C. Bryant, Superintendent of Grand Canyon National Park, an old acquaintance and an enthusiastic outdoorsman himself.

"Now that you fellows have visited Havasu Canyon on the south side of the Grand Canyon,

why don't you get into the Thunder River country, on the north side?" he said, in the course of our talk.

Never having heard of Thunder River, we encouraged the Doctor to elaborate, which he did at length and with enthusiasm.

"Thunder River," he began, "is a remote and practically unknown quadrangle in the northwest corner of Grand Canyon National Park. Not more than a handful of whites have ever been into the region. I have not been there.

"From time to time over the years we've had exciting reports of magnificent waterfalls in the canyon, always sighted from a distance by one of our park rangers or some wandering cattleman, fisherman, or local explorer. Some have reported mile-long cataracts foaming like Niagara and tumbling down the canyon with a roar like thunder—hence the name. Even persons who haven't seen the river

itself declare they've heard the thunder of its falls and rapids from points on the North Rim. The most persistent and persuasive rumors hang around the very origin of the stream. Local tradition has it that Thunder River issues full-born from a tremendous fissure in the canyon wall to go charging down the canyon like a stampede of wild horses, plunging over great falls and rushing along with mad fury.

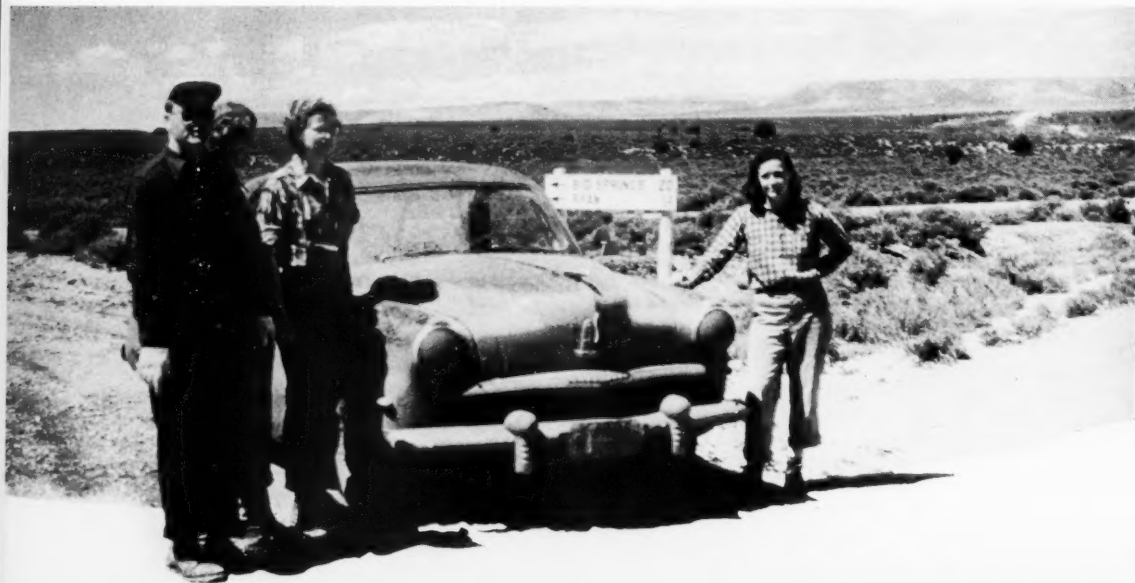
"None of these accounts has ever been fully substantiated by other narrators. Each alleged eyewitness has had a different tale to tell, although all concur in one thing, the sight was stupendous.

"Curiously enough," he continued, "all have disagreed violently on the origin of the river, on its size, and on the very existence of the falls. Hade Church vows Thunder River has a 500-foot waterfall. Lauritzen, who should be the most trustworthy authority since he has published an account of his visit, declares Thunder River has no waterfalls. He contends further that the stream has a most uneventful birth, issuing mildly from a spring at the base of a cliff and never, throughout its short eight-mile course to a union with the Colorado River, exceeding 75 feet in width. These conflicting reports leave one with the conviction that few of the narrators have been close enough to the river to estimate its true dimensions with any degree of accuracy.

"We've continued to hope over the years that someone would explore the canyon thoroughly and at length, particularly the section up Tapeats Creek, the principal stream draining the region. Four or five miles up this branch there is said to be another spring similar to Thunder Spring. It has been sighted from the canyon rim by one of

our park rangers. You could most likely travel upstream by keeping to one of the benches high above the stream and following Tapeats Canyon to a point where this big spring would be visible. We understand the trip *down* Tapeats Creek to the Colorado is a difficult one because of a narrow gorge and obstructing waterfalls, but if you stay up on the rim you could probably negotiate even this section. I am sure," he concluded, "you would find Thunder River one of the most exciting expeditions in the Southwest."

Chagrined that any part of this great sprawling domain should remain physically unknown to him, especially when that part appeared to harbor a hidden Valhalla, Dr. Bryant was unmistakably hopeful he could talk us into going there. The Doctor is a passionate lover of the Southwest. Moreover, he is a convincing talker with a sincerity of purpose that gets through to the listener. Still, the proposition sounded too visionary for us to consider. Dr. Bryant had told us the elusive Thunder Spring was at least 15 miles from the end of the road at Little Saddle (we found it to be 18 miles by trail). No one could say for certain where the trail began or in which direction it ran. As I pointed out, even making the necessary arrangements for such an undertaking would be difficult. The Doctor assured us he would do everything possible to help us arrange the details of the expedition. I am happy to say his cooperation was such that we were enabled to plan the expedition, eventually, as it were by remote control. Nevertheless, when we said goodbye to Dr. Bryant, in that summer of 1946, it was with scarcely the remotest hope we could ever make the trip to Thunder River.



"RYAN 14" it says here, but it means two hours of rugged going for the author, Mary Lange, Marjorie Moore, Elsa Bailey, and the photographer, Alfred Schmitz.



A chance meeting at a mud-hole made it possible for the party to get into Thunder Canyon—after pulling us out of the mud with their jeep, the Swapp brothers undertook to pack us in from the road's end. The author (left), Billy Swapp, Elsa Bailey, Tuffy Swapp, and Mary Lange behind Marjorie Moore. Bob Cassel joined the party later.

Photographs by Alfred Schmitz

*Looks like a snow storm
—it is.
This is road's end
at Little Saddle,
where even the jeep
yielded the trail
to pack horses.*



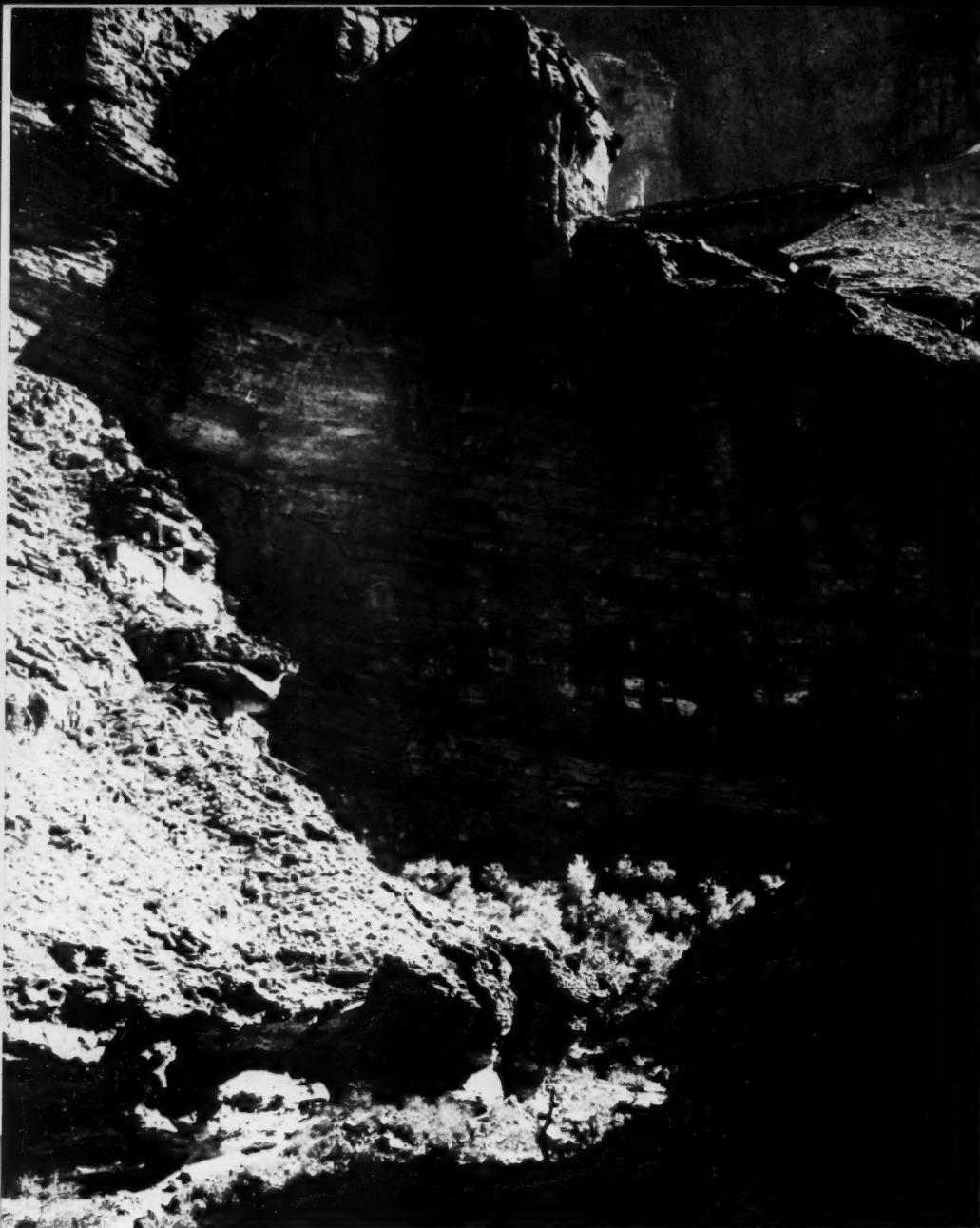
But the idea would not down. The more we thought about it during the ensuing months, the more it intrigued us. No doubt the recollection of Dr. Bryant's parting remark did much to crystallize our wavering determination.

"Hade Church assures me there are twenty-inch trout in Thunder River—therefore," he had concluded, that day, in a tone of devilish confidence, "bring plenty of tackle."

Gradually the quest for Thunder River became an obsession. The project gripped our imagination

for it seemed to offer a unique opportunity for a bit of original canyon exploration. Schmitz especially was inoculated with the virus of Thunder River. He is an archeologist turned photographer, afflicted with the traditional, fatal wanderlust of those probing tribes, and an indefatigable explorer. He has, moreover, a penchant for canyons.

There followed months of sending out feelers to various correspondents scattered over the Southwest. We learned one important fact: horses could take us only as far as the spring at the head of



Thunder Canyon is boxed in by towering walls—one reason it is still largely unexplored, its springs and creek a source of confusion.

Thunder Canyon. The rest of our exploratory work up and down the canyons would have to be afoot.

For a time we pondered the possibility of making the expedition on our own. This raised a serious point—could we find our way into the canyon without a guide? (We are convinced now that we could not have done so.) While there were numerous, and always conflicting, theories as to the general direction the trail took, there was no ac-

tual mapped knowledge of its whereabouts. We knew only that it began somewhere near Little Saddle—although, as Edwin Corle aptly remarked, nobody agreed with anybody else as to just where.

A stream of correspondence with prospectors in Arizona and Utah brought only indifferent replies or references to some other person or persons who might be familiar with the trail. Actually, we never heard from anyone who had been anywhere

near the canyon. Yet in the end it was this very vagueness that sealed our determination to see the country. The possibility of our making a "first descent," as Schmitz put it, of the upper canyon region, ultimately proved irresistible. In spite of the uncertainties, we decided to drive into the North Rim country and take a chance on finding a packer who could guide us into the canyon.

We scheduled the trip for April in the hope of getting into the canyon at a season when the water was at its fullest and thus confirm or disprove the tales about the falls. Just two weeks before we were scheduled to start, one correspondent wrote that we could not get into the North Rim country at that time because eight feet of snow had recently fallen. When we wired Dr. Bryant to verify this disheartening news, he replied that he could not do so because the telephone connection with the North Rim was disrupted! But we went ahead with our plans, stubbornly trusting to luck.

On an April morning in 1948 our party of five drove through the Mormon communities of southern Utah, turned southward into Arizona, and continued on toward the North Rim. Leaving U. S. 89 a few miles south of Fredonia, Arizona, we took an obscure dirt road that led to Ryan Ranger Station. Here our troubles began in earnest, and they continued during the whole of the expedition. A recent fall of snow made the road so slippery we were two hours negotiating the 14 miles to Ryan. With further progress out of the question, we spent the night at the ranger station and pulled out the next morning determined to return in a couple of weeks when the sun and wind might have dried the roads sufficiently to permit us to reach Pine Flat, end of the road for automobiles.

We had gone less than a quarter mile back when the car got hopelessly mired in the mud. In the midst of our despair, a jeep skidded into sight, disgorging a pair of tall, rangy cowpunchers. Taking in our plight at a glance, they hooked a chain to the bumper and hauled the car out of the hole it had dug in the soft roadbed.

Immediately it became apparent that our misfortune in being snowbound at Ryan was a blessing in disguise. It was the means of our meeting Billy and Tuffy Swapp, a pair of likable and accommodating brothers from near-by Kanab, Utah, who solved all our problems on the spot. Under the united persuasion of the five of us, they weakened and agreed to meet us in two weeks and attempt to pack us into Thunder River. When we

returned a fortnight later, the roads had cleared sufficiently to permit us to reach Pine Flat forest camp, 20 miles beyond Ryan, where the Swapps were waiting with saddle and pack animals.

The three or four buildings at Pine Flat, generally in use only during the fall hunting season, were now occupied by three men and six hunting dogs. Besides Tuffy and Billy Swapp, there was Howard ("Barney") Bourneman, Federal trapper of predatory animals in the Kaibab and owner of the hounds. Living in splendid isolation here on the canyon rim at 7,000 feet elevation, the trio formed a modern counterpart of the mountain men of the old fur brigades. Apparently glad of our company, they were most hospitable and entertained us royally.

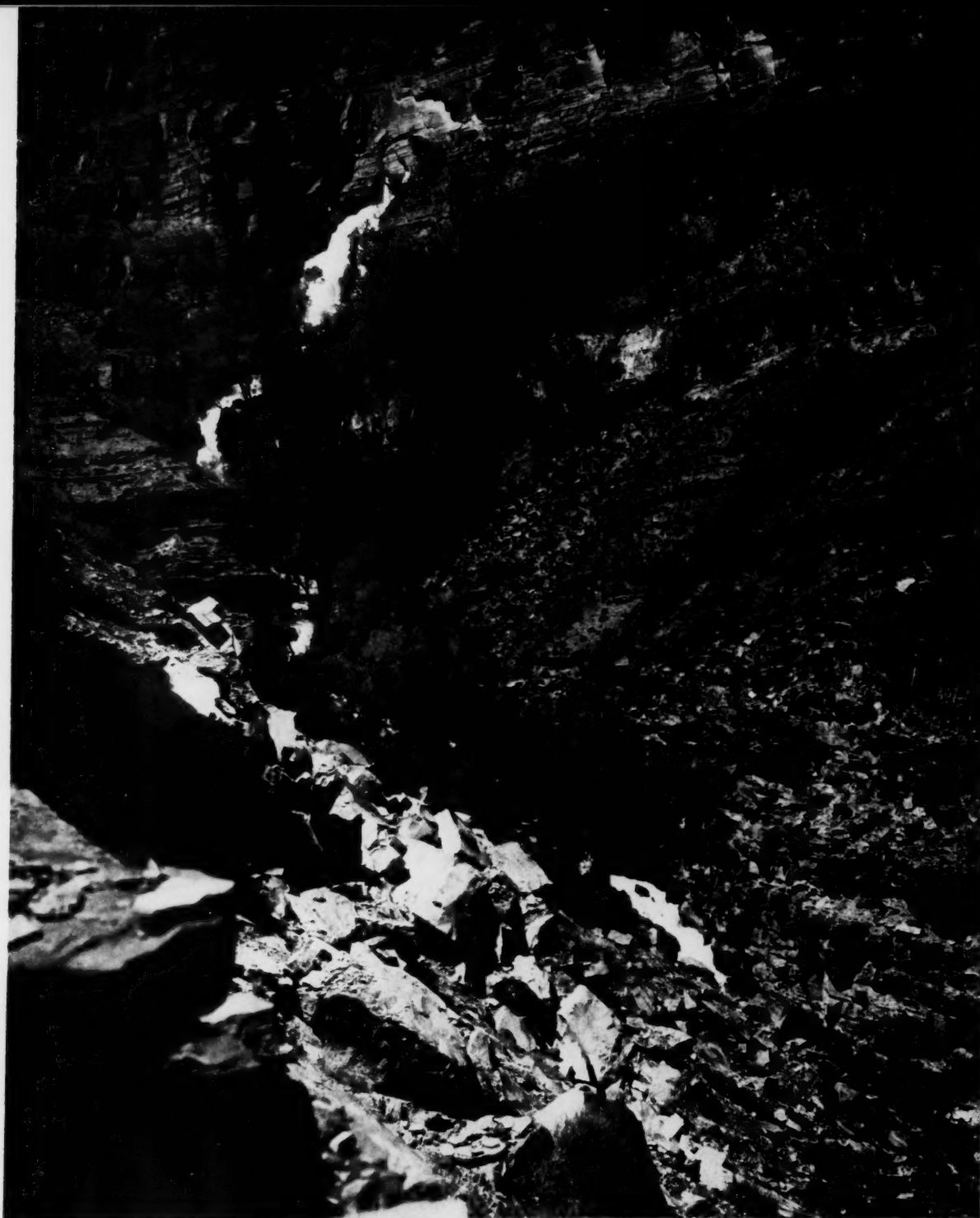
Next morning Tuffy loaded our gear into the jeep in order to save the animals the nine-mile tote to the takeoff point at the rim. We piled into the jeep and left this exclusively male hideout in a driving snowstorm (this was now late in April). When the photographers in the party anxiously queried Tuffy concerning the prospects for better weather, Tuffy drawled:

"Anyone who tries to predict the weather in the Kaibab is either a newcomer or a fool!"

We bounced over a primitive Forest Service road that ran through Indian Hollow and on to Little Saddle and the very brink of the chasm, where the full panorama of the canyon burst upon us. Most of this distance was made over a crude track that was more suited to a bulldozer than a car. Actually, Tuffy was under no compulsion to transport us out to the rim. We had contracted for the younger brother Billy to pack us into the canyon. Tuffy was about to embark on one of his periodic hunts, however, and since his objective lay straight in our path he volunteered to drive us to the canyon rim where Billy would meet us with the stock.

Tuffy's job is the result of a long-standing feud between the Forest Service and the local cattle interests. The Forest Service permits the running of private beef stock in the national forest preserve. In recent years the preserve has failed to support the number of deer it once had. Biologists claim the cattle are eating the food that once sustained the deer; the cattlemen have always contended the two species do not feed on the same browse.

The Forest Service began a project in 1947 to settle the controversy once and for all. Here was



ABOVE: Thunder Spring issues from two slits high in the canyon wall and plunges over the step-like rock strata in a series of falls; the run-off is Thunder Creek, which takes a short and rocky course to join Tapeats Creek.

RIGHT: Al Schmitz returns from a closer look at the falls of Thunder Spring.

where Tuffy came into the picture. It was his job to bring in periodically a deer or a head of beef stock for analysis of stomach contents to determine precisely what the animal had been feeding on.

The Kaibab preserve extends all the way to the canyon rim and here Tuffy left us and brother Billy took over. We touched up the animals and headed down a precipitous trail that fell away 1,000 feet in the first plunge of our 5,000-foot drop into the canyons. Without a guide it would have been virtually impossible for us to find the beginning of the trail. Once Billy pointed it out, it was plain enough here, although we could see that down on the flat below it petered out altogether and Billy would have to rely on his knowledge of the country.

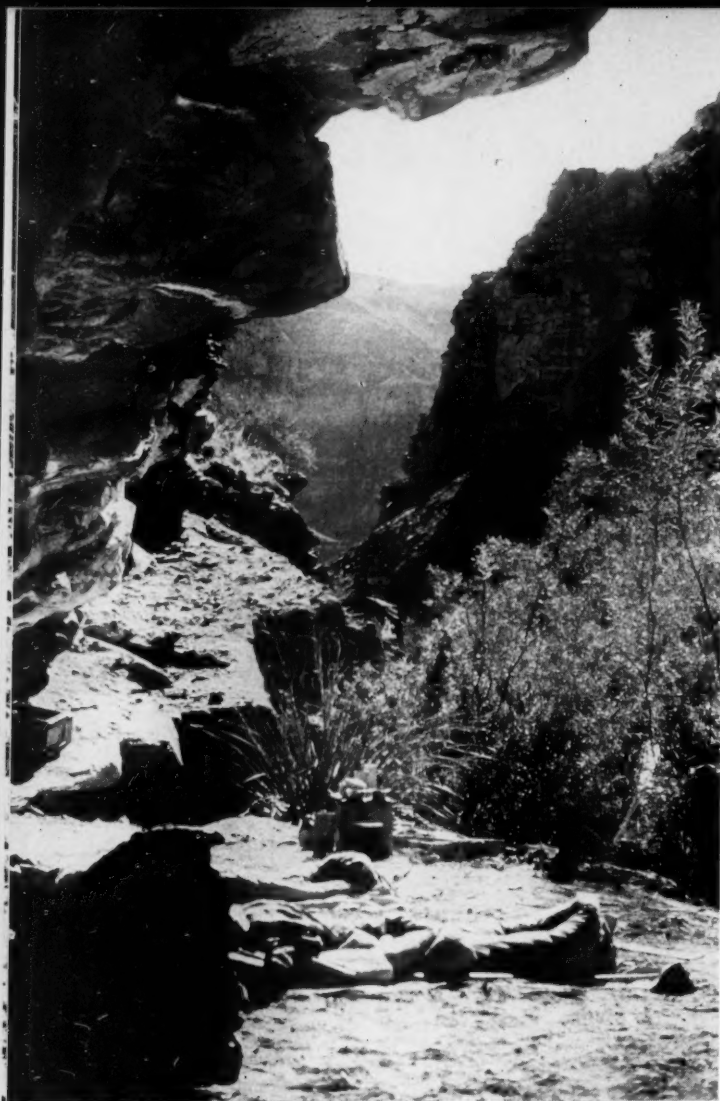
Taking off from Little Saddle, the trail dropped abruptly in a series of switchbacks that plunged down the face of the cliff through the familiar Kaibab and Coconino formations. The scenery was typically Grand Canyon, with the same varicolored stratification that characterizes the South Rim. Here, however, in place of the single abyss which drops sheer from many points along the South Rim, we looked down on a series of three

descending canyons, with our objective, Thunder River, at the very bottom of the trough.

Threading in and out of a maze of canyons that would have baffled a mountain sheep, we eventually found ourselves at the top of the Red-wall Limestone formation. Dropping down a precipitous trail that clung to the cliff side, we entered the head of Surprise Valley, the second of our three benches. Continuing our course eastward, we made our way across the valley and up the farther slope of the saucer-shaped depression. Reaching the rock-rimmed lip, we peered over into a wild canyon that opened under our feet and got our first glimpse of Thunder Spring and its fall—a good eighteen miles from Little Saddle. A final drop of 1,000 feet, and we stood at last in full view of our objective.

We set up camp across Thunder Creek at its junction with Tapeats Creek. Looking back across Thunder Creek we caught a magnificent sight: tumbling down the wall before our eyes was a tremendous waterfall. It was remarkable in that it was not formed by a stream tumbling over the canyon rim but spurted directly out of the canyon wall. At the time of our visit the water issued in twin streams from two vertical slits in the cliff





This camp on a ledge above Thunder River had a keyhole view of the South Rim.

packer, who has run cattle in the region since boyhood, and with some exploring on our part, we were able to solve much of the mystery surrounding Thunder River. The source of confusion is the duplication of names and the fact that not *one* but *two* streams are involved—Thunder River and Thunder Creek. When Lauritzen speaks of Thunder River as “issuing mildly from the ground” he is describing one stream correctly; when Ranger Laws and Hade Church contradict him and declare that Thunder Creek pours spectacularly out of the cliff side they too are correct—the two factions are describing different streams. Further confusion results from the fact that Thunder River rises in what local cattlemen call Bridger Canyon—and there are two Bridger Canyons! Thunder *Creek* has a spectacular birth; Thunder *River* has a mild origin. They originate in springs four miles apart and flow down parallel canyons to Tapeats Creek, the lower part of which is more popularly called Thunder River.

Oddly enough Lauritzen, in the account of his visit published in 1941, was fully aware of the existence of two springs and two streams. He seemed unable, however, to reconcile this fact with the current rumors—all based on hearsay—which recognized the existence of only one stream and one source. Lauritzen failed to grasp that when misinformed spokesmen, with pardonable confusion, alluded to a fall in Thunder *River*, they could only be referring to the great fall which gives birth to Thunder *Creek*. Consequently he continued to deny the existence of a fall, to the confusion of those who had seen the fall or were aware that he had explored the canyon extensively.

The upper end of the gorge, the unexplored and controversial section where Bridger Canyon pours the waters of Thunder River into Tapeats Creek, is by all odds the most impressive part of the canyon. It is the only section where the canyon widens to any appreciable extent. But it can be reached only by wading up Tapeats Creek against the current and by scaling the canyon wall occasionally to get around a narrow stretch or a dangerous rapid. As a result, the region has remained virtually unvisited—and locked in mystery.

Only four persons are known to have penetrated Bridger Canyon. Besides Lauritzen and Paul Kernodle, who made the exhausting trek in 1940, Al Schmitz and Bob Cassel of our group worked their way upstream to the spot. In order to accomplish this feat, these two returned to Thunder River in

walls, several hundred feet above the canyon floor. The two streams fell 50 feet in a V-shaped pattern then merged to form the first waterfall. The fall was similar to Yosemite Falls in that it dropped 100 feet in a straight plunge, then glissaded a few yards over an intervening shelf of rock, made a second drop of 150 feet, and finally cascaded down the canyon several hundred feet to a juncture with Tapeats Creek.

The clamor of the torrent reverberating through the narrow gorge was deafening—the name Thunder fits! The stream rushed along at a rate we estimated as 20 miles an hour, a speed normally reached only by flood waters racing down a narrow gorge (such as happens once in a blue moon in the Titus Canyon section of Death Valley).

With the guidance and counsel of Billy the

Dr. Bryant was right about the fishing in Thunder River! Bob Cassel found it good.

the fall of 1948, five months after our original visit, at a time when the creek was at its seasonal low. Even then they spent most of a day fighting their way upstream through five miles of boulder-strewn water. The undertaking was unexpectedly arduous. Unable to make the return trip the same day, the two spent the night at the spring, on short rations but comfortably stretched out at a campfire.

Cassel's and Schmitz' observations revealed that Thunder River does not issue from a hole in the ground, as Lauritzen conjectured. Rather, like Thunder Creek, it pours out of a fissure in the cliff wall. At this point, however, the canyon is choked with talus and debris which pile up hundreds of feet to the mouth of the spring, giving that the appearance of being at ground level. The spring's water percolates down through the debris and comes to the surface 50 feet down the canyon, bubbling up from among the boulders and giving the illusion of originating at this spot rather than in the canyon wall above.

Although travel upstream was arduous in the extreme and even dangerous at times, there was no appreciable obstacle to our progress downstream almost to the Colorado River, and we made the round trip several times during our stay in the canyon bottom. This is rugged country. While we did not succeed in getting all the way down to the Colorado because of high water in Tapeats Creek, we were within sight of the big river and can say that it would not be impossible to reach it. Blocked by the unusually high water of the late spring season, we stopped on the high bluffs immediately above the confluence of the two streams. If he were to visit the canyon in September or October when water is low and the stream navigable on foot, an experienced walker could reach the river without danger and with little effort.

Popularly reported to be 75 feet, the width of the creek falls far short of that figure, we found by actual measurements. We taped it at the widest spot we could find—the confluence of Tapeats and Thunder creeks. Here the stream measured a modest 38 feet. From various measurements we estimated that the average width of the stream from beginning to end probably does not exceed 25 feet; however, it discharges a tremendous volume of water and no doubt the spectacle of this racing torrent, and the thunder of its rush, have led to undue exaggerations of its size. Persons sighting the stream from Timp Point or other spots on the



high rim might easily misjudge by many times the actual size of the cataract.

To those used to taking their diversion in rough doses, the rewards of a visit to Thunder River are manifold. For one, the scenery is unsurpassed in the Southwest. For another, there is fishing of the kind anglers go a long way to enjoy—nevertheless, natives told us that not more than 50 persons had penetrated the region since its discovery in 1904. A crude register in the canyon bears them out, its pages showing, in 1948, about so many names.

Perhaps the area's prime attraction rests in its remoteness and in the sensation one experiences standing on a spot where few persons, if any, have stood before him. To the adventurous the latter possibility has that fascination which draws men to the ends of the earth.

FROM THE DAWN OF HISTORY to the buffalo nickel, the bison has been one of the most romantic of all animals. The story of the buffalo, more ancient than that of the ox, is interwoven with the story of civilization. The vast herds lost their battle against man who nearly brought about their extinction. Today a few thousand animals in game preserves and zoölogical gardens in America and Europe recall millions that once roamed over two continents.

Cave Paintings

The oldest known paintings of any kind, the rock drawings in the caves of southern France and northern Spain, are replete with the shaggy-maned bison. Hermetically sealed by a landslide and not

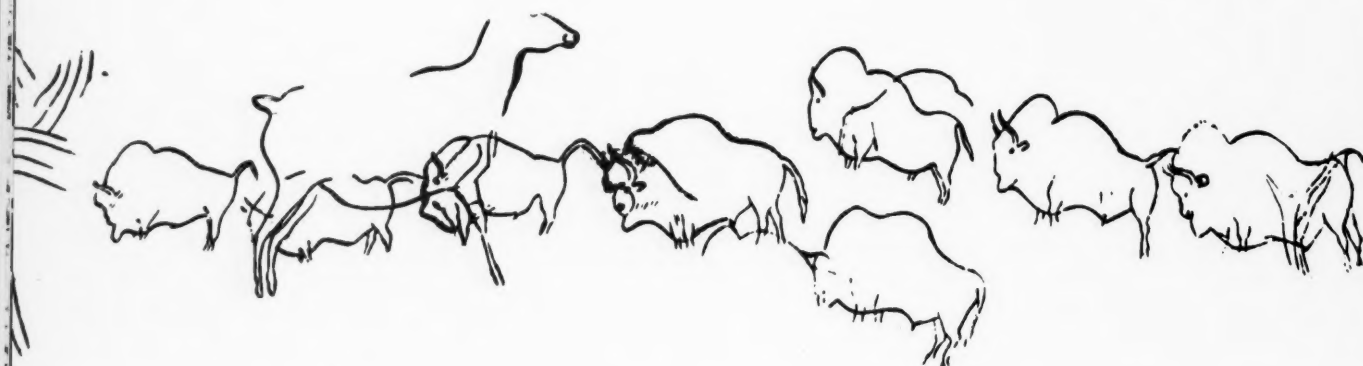
ning of the Pleistocene time, according to Carl O. Dunbar, Yale paleontologist.

Greeks and Romans

The Greeks emblazoned the bison head on their shields and used it in architectural detail. Aristotle gave "the wild ox of Paenonia" its name, *bo-*

Where the Buffalo Roamed

BENJAMIN DRAPER



discovered by modern man until the end of the nineteenth century, the paintings date back, variously estimated, from 25,000 to 100,000 years, to the upper Pleistocene period. Drawn on walls and ceilings of underground caves, the pictures escaped the destruction of one of the late Ice Ages.

These rock pictures by Cro-Magnon artists are engravings on stone surfaces and exceedingly skillful polychrome paintings, made with paleoliths, small tools of ivory and bone. The reindeer, mammoth, the cave bear, elk, wild horse, and rhinoceros are shown as well as the bison.

Many of the animals are pictured at repose or lying down. Others are shown at close quarters, as primitive man knew them, as the hunter struggled, body against body, in an age when knives, clubs, and stone axes were the only weapons. Fossil remains of bison from the Pleistocene have been found on both continents, indicating that this animal invaded America from Asia about the begin-

ABOVE: Cave paintings—bison and hinds—at Les Combarelles, France.

RIGHT: Bison from the cave at Altamira, Spain.
(Courtesy of the M. H. De Young Museum, San Francisco)

nasus. Julius Caesar, in his *Gallic Wars* (the Duncan translation, 1753), wrote a fine commentary on the animal:

"A third species of animals are the *uri*, nearly equalling the elephant in bulk; but in colour, shape, and kind resembling a Bull. They are of uncommon strength and swiftness, and spare neither man nor beast that comes in their way. They are taken and slain by means of pits dug on purpose. This way of hunting is frequent among the youth and serves to inure them to fatigue.

They who kill the greatest number, and produce their horns in publick, as a proof, are in high reputation with their countrymen. It is found impossible to tame them, or conquer their fierceness, tho taken ever so young. Their horns, both in largeness, figure, and kind, differ much from those of

The two of his drawings reproduced here have very different appearances. One may have been made before Dürer actually ever saw one of the animals. The *Auerochse* sketch from the British Museum collection closely resembles the present day *Wisent*, of Germany.



our bulls. The natives preserve them with great care, tip their edges with silver, and use them instead of cups on their most solemn festivals."

Europa Rode a Bison

In the early 1490's, before the influence of the discovery of the New World was felt, Albrecht Dürer, the great German artist, made a number of drawings of the European bison. Dürer would have had many opportunities to observe the animals for they roamed the forests of his country.

The animal with the flowing beard was used on several occasions by Dürer. It appears in the famed *Gebetbuch*, a handsome manuscript prayer book which Dürer illustrated in 1515 for his patron, Kaiser Maximilian. Friedrich Winkler, the Dürer scholar, says that the artist also used the sketch of this animal for Maria and Many Animals and for his Lemberg round drawing in which Europa, instead of being on the traditional Bull, rides the bison. Both drawings are examples of the artist's earlier work.



In Nueva España

The first bison of recorded history in the New World was seen by Cortez, the Spanish conqueror of Mexico, in 1521, when he marched into Mexico

City, although historians and archeologists agree that Aztec accounts, if they existed, doubtlessly would be full of buffaloes. In Montezuma's menagerie, Cortez saw "the greatest Rarity, a wonderful composition of divers Animals."



"Buffalo Hunt, Chase" by George Catlin,
from his North American Indian Collection.
(From the collection of Edward E. Hills,
San Francisco)

strength and Agility," wrote Cortez' chronicler Don Antonio de Solís y Rivadeneyra.

The Spaniards also called the bison wild cows and "hump-backed oven." Alva Nuñez Cabeza de Vaca and his companions, on their journey from Florida to the Pacific, 1528-1536, saw the bison for the first time on its native range, where Texas is today. "They appear to be the size of those in Spain," de Vaca recorded. "I have seen them thrice and I have eaten their meat." Coronado saw "wild and fierce great herds of a new kind of ox" on the plains north of the Gila in 1542.

SUCH AUTHORITIES as William T. Hornaday, Martin S. Garretson, and Ernest Thompson Seton all agree that calling the bison a buffalo is a harmless custom, so universal that "naturalists could not change it if they would."

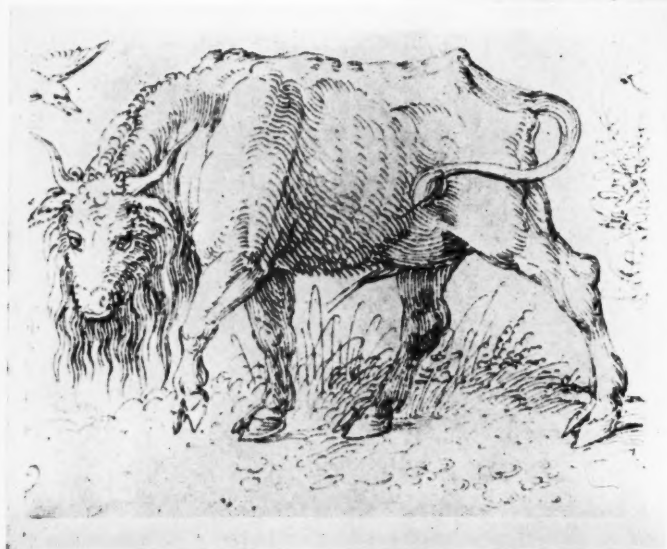
The American and European animals are closely related. Linnaeus, in *Systema Naturae*, the definitive tenth edition, 1758, which is known as the naturalists' bible, refers to the European animal as *Bos bonasus*, and the American as *Bos bison*.

In the *Historia de los Indios*, by Francisco Lopez de Gómara, published in 1552-53, appears probably the first picture of the animal in the New World. A second drawing, the animal facing the other direction and apparently copied, is in the 1554 edition of Gómara's *La Historia General*, in the Bancroft Library at the University of California. "Assí que algo tienen de león, y algo de Camello," writes Gómara.

Thévet, in 1558, published a drawing very similar to Gómara's, of the southwest plains buffalo. The Nueva España volume of Johan Theodore de Bry's mammoth *Collection of Voyages in the East and West Indies*, which appeared in 1595, a rare copy of which is in the Sutro Library in San Fran-

"It has crooked shoulders, with a Bunch on its Back like a Camel, its Flanks dry, its Tail large, and its Neck cover'd with Hair like a Lion. It is cloven-footed, its Head armed like that of a Bull which it resembles in Fierceness, with no less

Two drawings by Albrecht Dürer: "Wisent" (RIGHT), and "Auerochse" (BELOW). (Reproduced from Friedrich Winkler's *Albrecht Dürer* by courtesy of the M. H. De Young Museum, San Francisco)



cisco, has several crude but recognizable drawings of the bison. Oddly enough, the Suto copy of the copiously illustrated *Nuremberg Chronicle* does not have a bison picture.

Father Hennepin

The American bison, a "gregarious bovine ruminant," is a close relative of the European animal. The North American bison is variously classified as Athabasca or wood bison, mountain, and plains bison, but these are believed by authorities to be climatic or geographical variations. "There was only one species on the American continent at the time of its discovery by Europeans," writes Glover M. Allen.

In 1612, Sir Samuel Argoll found buffalo in eastern North America at a spot which some authorities place today as the site, on the Potomac, of Washington, D.C. Samuel Hearn recorded in his journal, January 9, 1772, "buffalo are plentiful at Lake Athabasca."

Mark Catesby, in *The Natural History of Carolina, Florida, and the Bahama Islands*, volume I of

which appeared in 1731 and volume II in 1743, writes: "These creatures, tho not so tall, weigh more than our largest oxen. . . . They range in droves, feeding in open *Savannas* Morning and Evening and in the sultry Time of Day they retire to shady Rivulets and streams of water gliding thro' thickets of tall Canes."

Father Hennepin, the intrepid priest, was sent by LaSalle up the Mississippi in 1680 to the Illinois country. Quite taken with the "*Boeuf monstreux*" which he found along that river, Father Hennepin embellished his reports, published from 1683 to 1698, with a number of drawings and sketches and gives sixteen pages to a description of the bison.

Peter Kalm, the Swedish "*opdager*," saw the same herds in Illinois in 1749. The bison was not confined to the lands that are now the United States but ranged as well the Canadian wilds as far north as Hudson's Bay. In 1799, in Manitoba,



ABOVE: Gómara's first buffalo. (Western History Collection, Denver Public Library)
RIGHT: Gómara's later buffalo. (Bancroft Library, University of California)

Alexander Henry, a fur trader with the Northwest Company, found "the buffalo swarming all along the Red River valley."

Earliest Indian Picture

The earliest known buffalo picture made by an Indian is, oddly enough, a painting on a buffalo hide, found in Mexico about 1760 and now in a collection in Switzerland. The robe, an historical pictograph, is believed by experts to represent a battle between the French and Spanish with their Indian allies, somewhere in what is now the southern states. The oldest dated buffalo robe of Indian design from the United States is 1797. A decorated buffalo robe in the New Mexico Museum also depicts the Indians killing, not the bison, but their enemies, other Indians in this case.

To the plains Indian, the buffalo was life itself. Food, shelter, and clothing were all provided at the buffalo hunt. Roving bands followed the migration of the great bison herds.

The Wisent

Wotan is often pictured in head-gear decorated with bison horns. On the European continent, the animal had a range known to have extended from southern Europe to Germany where it is called *Wisent*, *Auerchs*, or *Buffel*, and to the Caucasus, Lithuania, and even to Russia and Siberia where it is known as *buivol* or *zubr*. In Caesar's time, the bison flourished in the forests of Germany and Belgium. It was known in France as late as the sixth century, writes Francis Harper. J. L. C. Buffon, a French naturalist, popular in his day, says the bison was found in Scotland. Buffon also made the somewhat startling statement, in 1828,



y enojan : finalmente es animal feo y fiero de rostro, y cuerpo. Huyé de los los çauillos por su mala catadura, o por nunca los auer visto. No tienen sus dueños otra riqueza, ni hazienda, dellos co-

that "the hunch, as tender as an ox tongue, does not follow conformation of the spine and is just a wen or piece of flesh."

Count Lazar in 1740 was driven to the Diet of Hermannstadt behind a team of bison. The flesh of the animal was considered a princely gift. Bears and wolves, as well as man, were deadly enemies of the European bison. It was exterminated in Saxony by 1793.



Title-page and illustration from De Bry's volume on New Spain. (Sutro Library, San Francisco)

English artists also depicted the bison. Samuel Howitt, in 1799, painted "Buffalo Hunting" for the *Sporting Magazine* and George Stubbs, earlier in 1791, had sketched a buffalo which he exhibited at the Royal Academy. As late as 1832, Thomas Landseer, another English artist, sketched a bison, although it was an animal that was confined in the *Jardin du Roi*, near Paris. Landseer published this drawing in his *Characteristic Sketches of Animals* a copy of which is in the Moore S. Achenbach collection at the San Francisco Public Library.

BISON AMERICANUS.

Le BISON AMERICAÏN.

THIS head I have already described in the Account of Beasts, p. 27, but having then by me only a sketch of the Animal, which I thought not sufficient to make a true figure from, I have since been enabled to exhibit a perfect likeness of this awful Creature.

Alors donné la description de cet Animal dans mes *Récits des Bêtes*, p. 27, mais n'ayant alors par devant moi qu'une légère esquisse de l'Animal, que je ne crus pas suffisante pour en faire une véritable figure, je me suis trouvé depuis en état de donner une parfaite ressemblance de cette terrible bête.

Pseudo Acacia bipida floribus roseis.

L'Acacia à fleurs-de-rose.

THE flowers and leaves differ little in their shape from the *Pseudo Acacia* fleur alba. The stalks and larger branches are thick, but with prickly hairs, and with sharp spines placed alternately. The flowers, which are paniculaceous are of a faint purple or rose-colour, and of a fragrant smell. I never saw any of these trees but at one place near the *Opuntia* mountains, where Indians had left their camp, and some of the trees had their branches pulled down, from which I conjecture they had been browsing on the leaves. What with the bright verdure of the leaves, and the beauty of its flowers, few trees make a more elegant appearance. I visited them again at the proper time to get some seeds, but the ravaging Indians had burnt the woods many miles round, and to-day destroyed them, to me great disconcertment, so that all I was able

Es fleurs et les feuilles diffèrent peu pour la forme de la *Pseudo-Acacia* fleur alba. Les tiges et les grosses branches sont épais de poils piquants, et armés d'épines aiguës, placées alternativement. Les fleurs, qui sont paniculées, sont d'un pourpre faible, ou plutôt de couleur de rose. Je n'en ai vu que dans un seul lieu, à l'endroit où des Indiens avaient campé, et quelques-unes des branches étaient tirées en bas, d'où je conclus qu'ils avaient brouté les feuilles. Avec la brillante verdure des feuilles, et la beauté de ses fleurs, peu d'arbres font un aspect plus agréable. Je les revis à la saison convenable pour en recueillir quelques graines, mais les Indiens ravageant les bois à plusieurs lieues d'alentour, et aujourd'hui les ont détruits, ce qui me causa beaucoup de peine.

The War of Independence

Evidence that the bison once roamed throughout the eastern part of America is found in the early names of towns, creeks, and rivers from Louisiana, Georgia, and North Carolina, to New York and Pennsylvania.

The buffalo along the eastern seaboard vanished in the trans-Allegheny migration as settlements sprang up after the American Revolution, wrote J. A. Allen in 1876. Soldiers, their pockets full of land script, pushed Westward. The trails of the bison, following easy grades and natural passes, were to become the routes of the pioneers.

Daniel Boone, in quest of the county of Kentucky, saw "buffaloes browsing on the leaves of the cane." In 1842 Sir Charles Lyell, an English geologist, while in Cincinnati, wrote of his journey to Big Bone Lick, Kentucky, "twenty-three miles southwest of this place and across the river. Within memory of persons now living, the wild bison or buffaloes crowded to these springs but they have retreated for many years and are now unknown." Naturalists agree that the bison was practically extinct east of the Mississippi river by 1800.

West of the Mississippi

Ideal country for the buffalo was found across the Father of Waters, in lands that were largely unknown even to Thomas Jefferson at the time of the Louisiana Purchase. From the Indians, the Whites—early trappers, mountain men, and explorers—had learned that the buffalo meant food, shelter, and even fire, wrote Henry R. Schoolcraft in his six-volume work *Information Respecting the History, Condition, and Prospects of the Indian Tribes of the U.S.*, published from 1851 to 1857, and illustrated in part by Captain Seth Eastman.

Lewis and Clark saw vast herds; their company fed on buffalo meat on the trek across the wilderness. The meat was preferred to elk or venison. Edwin James, who accompanied Stephen H. Long on his expedition to the Rocky Mountains in 1819-

20, observed "immense herds of bisons, blackening the whole surface of the country through which we passed. At this time they were in their summer coat. From the shoulders backwards, all the hinder parts of the animal are covered with a growth of very short and fine hair, as smooth and soft to the touch as a piece of velvet. The tail is very short, and tufted at the end, and its services, as a fly-brush, are confined to a very limited surface." James, a more careful observer than his French contemporary, Buffon, recorded "elongated vertebral processes supporting the hump."

John Charles Frémont, in his pathfinding, describes the "little fat buffalo-fed boys who tumbled about the camps of the mountain men." Fré-

Earliest Indian buffalo robe painting. The bison is about to escape from the scene via the upper right corner. (Courtesy Denver Art Museum)

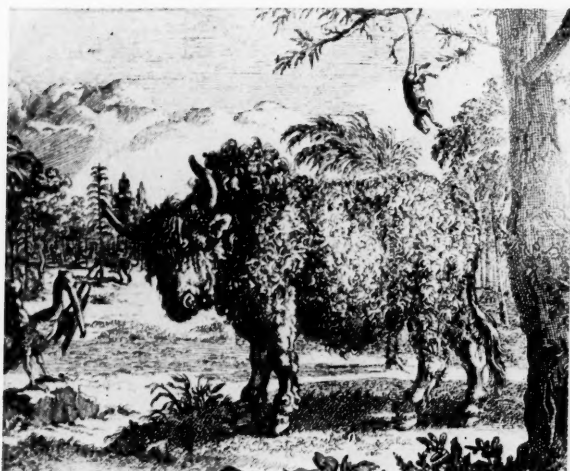




mont, who adds greatly to the buffalo lore of his day, wrote: "Just the haunch is eaten. The tongues, of rare delicacy, are gathered in great quantities and put down in brine." Frémont also dignified the "buffalo chip," used for fire building in the woodless country by Indians and leather-faced plainsmen alike, by calling it *bois de vache*, after the French trappers' lingo.

Up the wide Missouri

High-lighted in every account of the early explorations of the Great West, so ably retold in our times by Bernard De Voto, are the vast herds of bison that roamed the plains. The winter and summer migrations of the animals were followed by Indian tribes. From Canada to Texas, from the plains to the Rockies, the bison was hunted. The Hon. Henry J. Coke, in *A Ride over the Rocky Mountains . . .*, in 1852, wrote: "In the Sweetwater valley are seen the buffalo for the last time on this side of the Rocky Mountains. It has always been a celebrated hunting grounds for the Indians and consequently a theatre of war."



Father Hennepin's "Boeuf Monstreux" from the 1698 Utrecht edition of *Nouveau Voyage*. (Western History Collection, Denver Public Library)

The number of bison around 1850 is conservatively estimated at sixty million. Jim Bridger, who bartered in buffalo tongues, sometimes trading 1,500 at a time, and who was known for his lavish exaggerations, said there were a billion, then admitted, that although for once he was right, it wouldn't do to tell!

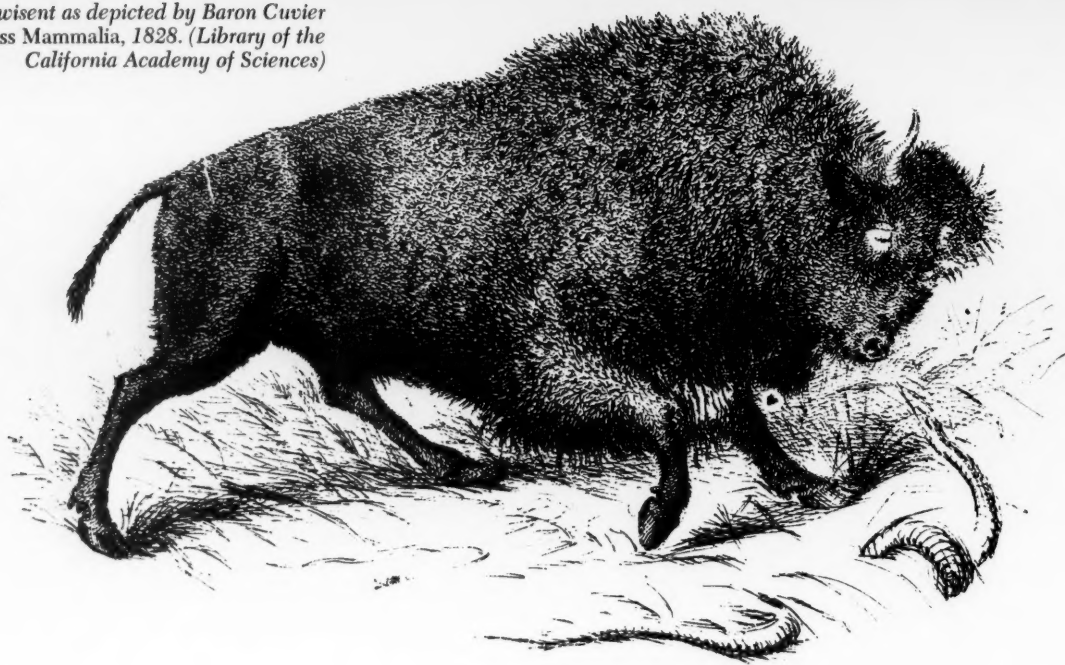
Horace Greeley, dead-headed on the Majors & Waddell stage line to California via the Pike's Peak gold rush camps, in 1859, estimated that he saw five million and it is likely that he did. Col. R. I. Dodge, in *The Plains of the Great West*, describes a herd that was twenty-five miles wide.

The Far West of the mid-nineteenth century was discovered by most of the population through published accounts of the adventurers and in the drawings and pictures of artists who accompanied them. The novels of James Fennimore Cooper and Washington Irving, many of which are illustrated by F. O. C. Darley, contain many scenes on the prairies of the buffalo hunt or other situations where the buffalo is a central or auxiliary character. Darley's popular "Buffalo Hunt" appeared in *Harpers* in 1858.

Prolific in presenting the American scene, Currier and Ives brought out a number of bison prints, many done by Arthur Fitzwilliam Tait. As late as 1872, the book, *Buffalo-Land* by W. E. Webb was a best-seller.

Maximilian, Prinz zu Wied, in 1833 set out on a scientific expedition up the Missouri from St. Louis, traveling by boat. A young Swiss artist, Karl Bodmer, illustrated Maximilian's *Travels*, first published in 1839. Bodmer painted what is one of the most famous of the early day buffalo scenes, "On the Upper Missouri."

John Mix Stanley had traveled West in the 1840's and later was artist to General Isaac Ingalls Stevens' expedition of the *Pacific Railroad Surveys*. A number of Stanley's buffalo canvasses are



in notable museum collections today. Alfred Miller, another artist whose recently rediscovered water colors are in Baltimore, accompanied the Stewart expedition in 1844. Charles Wimar, painter of the Indian frontier, is another whose buffalo pictures were recently shown in St. Louis.

George Catlin, inveterate adventurer who gathered what is probably the greatest Indian gallery of all times, went up the Missouri and on up the Yellowstone in the 1830's. Famed as well for the John Colt "Revolving Rifle" and "Revolving Pistol" pictures, Catlin spread scientific knowledge of Indians, their customs and legends, all over the world. "The Yankee fellow" journeyed to London, a tomahawk scar on his cheek, "to cash in on his precious Indians." Catlin also exhibited many buffalo pictures among which was his "Elks and Buffaloes on the Texas Prairie along the Brazos River," now in the Smithsonian.

On July 16, 1843, John James Audubon killed a male buffalo on the Yellowstone River. Of more importance are two fine pictures of the animals that he made which are now collector's items.

Gentlemen Sports

In primitive times, blizzards were the greatest natural enemy of the buffalo. Entire herds drowned crossing rivers on thin ice. In the summer season, they sometimes mired in quicksands of such rivers as the Platte. The prairie fire, which came with

the advent of the traveler, invariably stampeded the buffalo and sometimes destroyed entire herds.

The grizzly is said to be the only animal that could kill a buffalo in a fair fight. Pumas and coyotes fought old or young animals on the fringes of the herd. Gray wolves are said to be the second greatest enemy of the bison. Man, however, has been responsible for the greatest wholesale destruction of the animal in its entire history.

Captain Henry James Warre, who left Montreal on May 5, 1845, crossing Canada to the Oregon Territory, wrote: "The excitement attendant upon hunting the buffaloe must be enjoyed to be appreciated. Over hill and dale you follow on horseback, at full speed, these enormous, unwieldy looking animals, and fire only when sufficiently near to be certain of your mark.

"Bears, wolves, foxes, and various kinds of carnivorous animals, accompany the herds of buffaloe, living upon their carcasses, when the ball of the hunter or other accident destroys these monsters of the prairies, while numbers of eagles, vultures, and buzzards, float through the atmosphere ready to assist at the demolition of the carcass."

One of the first protests of record to the United States Government against needless slaughter of the buffalo came from outraged Indians, according to Martin S. Garretson. Sir George Gore, a wealthy Irish nobleman, and his party in 1855, while on a hunting expedition, got 2,500 bison as

well as forty grizzly bears and other game. Plains Indians sent a delegation to Washington at this untoward despoilation.

The number of animals that Gore and his friends slaughtered was exceeded by Nez Perce Indians in a hunt described by George W. Pine, in 1870. "A thousand Indians in an hour charged and killed three thousand animals. By night with the help of squaws, the butchering was done." The difference in the two hunts was that the Nez Perce kill was to provide the entire tribe with food, shelter, and clothing for the better part of a year.

The Grand Duke Alexis, son of Czar Alexander II, staged "the great buffalo chase," the Royal Hunt, in 1872 near North Platte, Nebraska, with Generals Custer and Sheridan in attendance, along with Buffalo Bill. After a grand ball at the American House in frontier Denver, the party, learning of another herd, took off for more shooting.

As early as the journey of Lewis and Clark to the sources of the Missouri, buffalo robes were an article of trade between Indians and whites. By 1840, the American Fur Company shipped 67,000

robes to St. Louis and by 1848, 110,000. Frederick V. Hayden estimated that in the Upper Missouri between 1850 and 1860, a quarter of a million animals were slaughtered each year, of which 100,000 were for robes.

Normally mild and timid, the buffalo in herds stampede at slightest provocation. "They go over the ground like a hurricane," said Frémont. Wounded, or brought to bay, the bison fights with great ferocity, goring both men and horses. Within the herd, the males fight among themselves. The patriarchal old bull usually dies fighting; he never regains his position if defeated. The migratory range of the buffalo, summer to winter, is not necessarily north to south and averages three to four hundred miles. The animal has three gaits: trot, gallop or long lope, and pace.

Coming of the Railroad

The great cattle drives on the Santa Fé, Stimson, Goodnight, Loving, and Chisholm trails, and the stage coach routes across the Great American Desert, followed paths made by buffalo herds. The



"Hunting the Buffalo in Winter"—drawing by Seth Eastman from Schoolcraft's *Indian Tribes*. (Library of the California Academy of Sciences)



ABOVE: "Life on the Prairie—the Buffalo Hunt"—a very rare Currier & Ives print. (Collection of Edward E. Hills, San Francisco)
 RIGHT: "Herds of Bisons and Elks on Upper Missouri," by Karl Bodmer, from Maximilian's Travels. (City Art Museum of St. Louis)

settlement of Oregon in the 1840's, the days of Forty-nine in California, and the Pike's Peak gold rush ten years later, meant that soon the American continent would be spanned by railroads. The coming of the Iron Horse foretold the last of the buffaloes.

The Pacific Railroad Surveys of the 1850's had brought expeditions of surveyors, scientists, and soldiers across the country from the Mississippi to the Pacific, in five parallel routes, from Canada to Mexico, to determine the best crossing. From that time there was a period of political jockeying, Congressional railroad charters and grants, and races between construction crews until at last the golden spike was driven at Promontory Point, Utah, in 1869.

William Bell, later one of the founders of the

Denver and Rio Grande railroad, wrote in 1868: "one hundred and fifty miles from Denver, as far as the eye could reach, the plains were completely covered with buffalo. I have heard of wagon trains being stopped a whole day for them to go by." Thirty years later, the last wild buffaloes of record, a few animals, were killed in Park County, Colorado.

Sometimes the great herds halted trains. Engineers shrieked to a stop while excited passengers watched the slow animals lumber across the track. As the telegraph lines were stretched across the plains, the buffalo, whom earlier travelers had reported "often rubbed against large stones until they shone like glass," had found new scratching places. "The creature has a one-track mind," wrote another traveler. "What he does, he does



with all his might." Down came the Western Union poles!

Buffalo Bill

William F. Cody, famed in his own day in *Beadle's Half-Dime Library* both under his own sobriquet and, in a juvenile fiction series, as "Buffalo Billy," has become an increasingly extravagant legend since. Cody was hired in 1867 by the Kansas Pacific Railroad to supply meat to their construction camps. His contract, which paid him \$500 a month, required that he deliver to the cook wagons twenty-four hind quarters and twelve humps a day. A breach-loading Springfield rifle, which he called "Lucretia Borgia," was used for the job. A light wagon followed on the plains to haul the meat back to camp.

In the eighteen months of his contract, Buffalo

Bill estimated that he killed 4,280 buffaloes. It was ironical that some years later, to start his Wild West Show, he had to pay \$300 for a single animal to exhibit.

By 1883, after a final slaughter by bad-tempered Sitting Bull and his band, the wild American bison was practically a thing of the past. The four principal causes, listed in retrospect, were: liquor traffic with the Indians (a tin-cup of whiskey for a buffalo robe), the Fur Companies, the invention of the breach-loading rifle, and the building of the railroads. The heroic animal of Albert Bierstadt's "The Last of the Buffalo" made men realize an era was closed.

Traffic then began in buffalo bones. The prairies for miles were white with bleaching skeletons. Homesteaders paid for seeds and ploughs by



"Slaughter of Buffalo on the Kansas Pacific Railroad,"
from Col. R. I. Dodge's *The Plains of the Great West*.
(Library of the California Academy of Sciences)

gathering bones to sell. Harper County, and Dodge City, Kansas, both declared buffalo bones legal tender. Between 1868 and 1881, two and one-half million dollars' worth of buffalo bones were sold in Kansas.

In Our Times

William T. Hornaday, who published his *Extinction of the American Bison*, in 1888, probably saved the buffalo from complete extinction. Through his efforts and the formation of the American Bison Society, the United States Government extended protection to the few remaining animals and began to build up herds. J. L. Hill further aroused an apathetic public in 1890 with his *Passing of Indian and Buffalo*.

Beniamino Bufano, well known San Francisco sculptor, designed the buffalo nickel which focused immediate and daily attention on the romantic animal. The buffalo has decorated postage stamps in 1898 in the Trans-Mississippi issue and again in the ordinary issue of 1922 and 1923. The Department of the Interior uses a bison on its official seal.

Today there are well over a hundred herds in the United States, a total buffalo population of upwards of ten thousand animals, scattered in



more than forty states and all living in captivity. There are around 20,000 in Canada. Europe has a half dozen small groups of the *Wisent*.

The Crow Indians, on their Big Horn reservation, have a herd of a thousand and "hunt" some two hundred each year to provide food for the tribe.

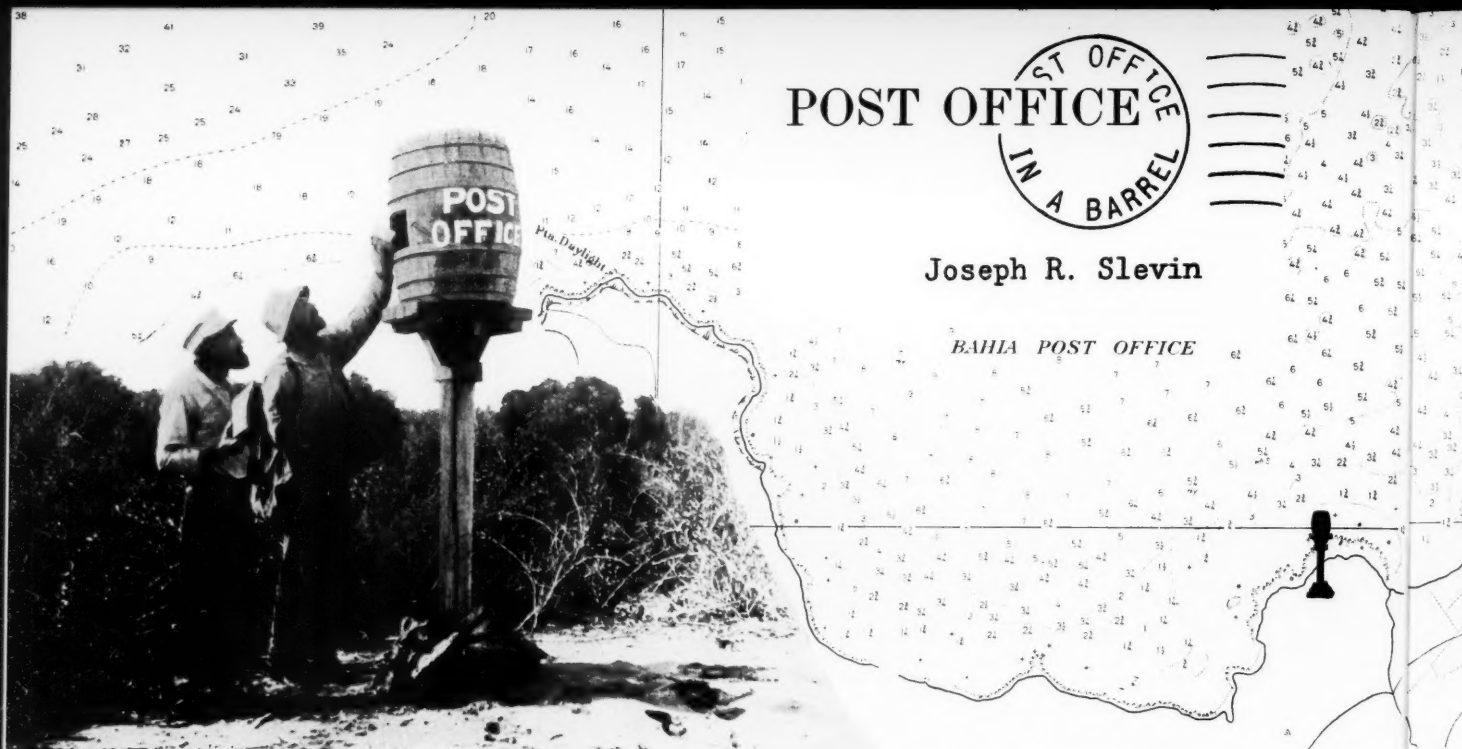
In Yellowstone Park, a million visitors gaze at the protected herd. Each year other thousands of tourists visit the grave of Buffalo Bill atop Lookout Mountain, near Denver. Two miles away, they again pause at the animal enclosure of the Denver Mountain Parks to watch a part of the small herd that has wandered up the gulch to the high wire fence. In zoological gardens and animal paddocks from Golden Gate Park to New York, there are similar small groups of these animals that once commanded the continent. Today they are little more than well fed, protected, living memorials that man has conquered a wilderness that once was theirs.

Only a hundred years ago, orders were issued at Fort Riley, Kansas, then an outpost of civilization, reading: "Student officers will discontinue the practice of roping and riding buffaloes."

Last year, Colorado ranchers complained that buffaloes, apparently loose from herds, were roaming the plains once again, this time from one haystack to another.

Colonel William F. Cody, better known as "Buffalo Bill."
(Western History Collection, Denver Public Library)





Rollo H. Beck and Captain Linbridge of the schooner "Mary Sachs" mailed a letter at Post Office Bay, Charles Island, the Galápagos, in 1901. (Courtesy of R. H. Beck)

UNIQUE AMONG POST OFFICES on the shores of the Pacific is the one at Post Office Bay, Charles Island, in the Galápagos archipelago. This "post office," a barrel nailed to a post, was doing an active business as far back as 1794, when the Congress of the United States passed the first laws for the management of the postal service, and even though times have changed with unbelievable rapidity and its services are no longer necessary, it is still functioning.

Who nailed up the first barrel in Post Office Bay, and when? No record has yet turned up. Perhaps it was nowhere but in some long lost ship's log. Captain James Colnett, Royal Navy, went to the Galápagos in the year 1793 on board the merchant ship *Rattler* to look into the possibilities of whaling in those waters. As far as can be ascertained he made no mention in either his diary or his log of erecting a post office, though it is marked on his chart which is dated 1793. British whalers were in the Pacific earlier, the whaler *Amelia*, Captain Shields, sailing from London for the Pacific in 1787. It is possible, therefore, that some British whaler set it up and that Captain Colnett found it on his arrival, though there seems to be no proof that such is the case.

In this modern world where time and distance

have been reduced to insignificance we are accustomed to sending letters across the seas in a few days by fast ships or by air in a few hours. One hundred and fifty years ago, or more, when the whalers of New England made cruises of one, two, or even three years in quest of the sperm whale or cachalot as they called it, things were quite different. It was then that the "post office" on Charles Island was in its prime, used by the whalers cruising the Galápagos waters—their best way of sending word to the folks at home, even though it may have taken a year or more for a letter to reach its destination.

It was customary for a homeward bound whaler to call at Post Office Bay if possible, pick up the mail, and carry it to her home port. Eventually, through the courtesy of merchants and by devious ways, it would get to the families and friends of the men who had trusted their letters to a barrel on a lonely beach in the Pacific.

Of historical interest it is that, during the War of 1812, Captain David Porter, commanding the U. S. Frigate *Essex*, used the "post office" strategically—looking over the mail deposited, he obtained information as to the vessels cruising among the islands which was helpful in his search for the British whalers he was out to capture. In his *Jour-*



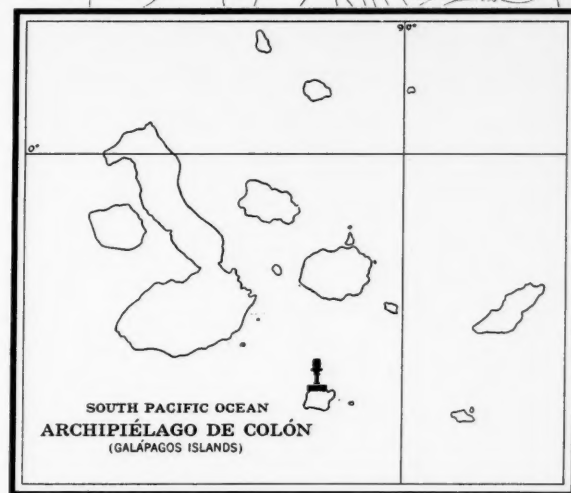
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*nal of a Cruise** Porter states: "I dispatched lieutenant Downes to ascertain if any vessels had been lately there, and to bring off such letters as might be of use to us, if he should find any."

Through the years, of course, the barrel, which was marked POST OFFICE, had to be replaced—when the hoops rusted the cask would fall apart. Now and then a box of some sort would replace the barrel. Various vessels took on the repairing and replacing of the beachside mailbox, but chiefly British men-o'-war going to station at Esquimault or en route home to be paid off.

On October 4, 1905, the expedition of the California Academy of Sciences to the Galapagos Islands visited Post Office Bay and found the barrel in fair condition. The hoops were somewhat rusted but holding together. An inscription on it read: "Erected by H.M.S. *Leander*." Crews of various vessels calling had painted or carved the names of their ships on the barrel. Among them were His Majesty's Ships *Virago* and *Amphion*, the French Cruiser *Protet*, the U.S.S. *Oregon*, and the U.S.F.S. *Albatross*.

**Journal of a Cruise Made to the Pacific Ocean by Captain David Porter in the United States Frigate Essex, in the Years 1812, 1813, 1814*, Second edition, 2 vols., New York, 1822.



A member of the Academy's expedition mailed a letter which was afterwards found to have been delivered just a year to the day after it was dropped into the barrel. It was picked up by the British yacht *Deerhound*, finally reaching the office of the Postmaster General in Washington. The rust from the barrel hoops had obliterated the address so that only the surname of the addressee and the city were legible. Nevertheless, the Post Office Department delivered the letter safely.

A letter mailed to the writer on January 3, 1932, arrived about a month later, having been picked up by Vincent Astor's yacht *Nourmahal*. This was brought to Papeete and came up on the regular mail steamer. Service has improved somewhat in the last few decades.

HARRY C. JAMES

Act Now to Save San Jacinto

SAN FRANCISCO, March 16, 1950—The U. S. Forest Service announced today it will hold a public hearing April 20 at 9 A.M. in the county courthouse at Riverside, to ascertain public opinion on the proposed elimination of 320 acres from the San Jacinto Primitive Area.

The Mount San Jacinto Winter Park Authority desires to construct an aerial tramway from near Palm Springs to the 8,500-foot level on Mt. San Jacinto, on a route which crosses the eastern edge of the primitive area. The primitive area is part of the San Bernardino National Forest.

The winter park authority has requested a right-of-way easement. The Forest Service states this would necessitate the elimination of 320 acres from the 21,400 acres in San Jacinto Primitive Area, because the existence of an aerial tramway would be inconsistent with the maintenance of primitive conditions.

Persons who desire to speak or present papers at the public hearing are requested to notify Perry A. Thompson, Regional Forester, 630 Sansome St., San Francisco 11, before April 14, so the time at the hearing can be divided equitably between those for and against the proposal.

Anyone desiring to express his views in writing may do so by writing to Regional Forester Thompson not later than April 27.

Mr. Thompson said all evidence, whether presented at the public hearing or sent by mail, will be considered by him and the Chief of the U. S. Forest Service in reaching a decision.—U. S. Forest Service Release.

The remarkable abruptness of the declivity on the northeast side of San Jacinto peak results in the crowding of all the [life] zones from Lower Sonoran to Boreal into the extraordinarily narrow air-line distance of three miles. The zones represented on the immediate slope of the mountain are thus (1) Lower Sonoran, (2) Upper Sonoran, (3) Transition, and (4) Boreal . . .

So wrote Joseph Grinnell and H. S. Swarth in their *An Account of the Birds and Mammals of the San Jacinto Area of Southern California* (1913). From even before that date to the present the slopes of Mt. San Jacinto have been a happy hunting ground for field naturalists of all kinds and other scientists and scientific-minded amateurs.

When it was first suggested that the mountain be preserved as a Primitive Area the scientists of the state were among those who joined enthusiastically in the

campaign for preservation. When the State Park Commission and the U. S. Forest Service cooperated in the establishment of the Mt. San Jacinto State Park, it was thought that the wilderness status of the area was completely safeguarded for all time.

Shortly after this state park was established, however, a few promoters of Palm Springs began considering ways and means to acquire control of it for resort purposes. In 1939 a bill was introduced in the state legislature, the provisions of which virtually gave control of the state park and the primitive area to the Palm Springs interests. The bill passed but the governor vetoed it. Nevertheless, the promoters were tenacious and bill after bill was introduced until finally the present one was passed and signed by the governor in 1945, creating the Mount San Jacinto Winter Park Authority.

The lands involved are a major part of the San Jacinto State Park which was established for the specific purpose of giving additional protection to this wilderness area. The *Riverside Daily Press* of June 19, 1937, in its story covering the dedication of the park, quotes Joseph R. Knowland, then chairman of the State Park Commission, in an unequivocal statement.

"State policies" was the topic of Knowland's address. He declared that "the retention of the Park as a wilderness area would always be the policy of the State Park Commission."

To this end the U. S. Forest Service made several land exchanges so that Forest Service lands already part of a primitive area could go into the state park. These exchanges were made on the understanding that the state park would maintain the status of a primitive area with no developments other than mountain trails, a policy clearly asserted in a communication from the office of the Regional Forester, San Francisco, dated June 15, 1937, to Newton B. Drury, then state Park Acquisition Officer:

The policy of the Forest Service is to preserve the San Jacinto Primitive Area as a roadless one, and it has always been our understanding that the San Jacinto State Park would be kept in a similar status. When the land exchange with the Southern Pacific Land Company was submitted as a step in the consolidation of the state Park, it was approved by our Washington office and the Secretary with the understanding that the entire area, both Federal and State, would remain roadless. In this connection, I quote from our letter of October 1, 1930, submitting the exchange case to our Washington office: "If this transaction goes through it is the plan of the State Park Commission to maintain their land as a part of the combined San Jacinto Mountain State Park—Forest Service Primitive Area of about 32,500 acres."

The Forest Service has no intention of extending any roads or truck trails into the primitive area and we trust

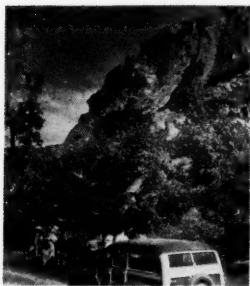
that the same policy will continue to govern the area under state jurisdiction.

The intentions of the State Park Commission are clearly stated in the minutes of its meeting of June 25, 1937:

San Jacinto State Park: The Commission upon motion of Commissioner Porter, seconded by Commissioner Hatch, unanimously adopted the policy of the National Forest Service in the preservation of the San Jacinto Primitive Area.

The construction of the proposed tramway and resort facilities would, therefore, be in absolute violation of this agreement—a barefaced breaking of faith, not only with the U. S. Forest Service, but with the many sincere, altruistic men and women who worked so diligently to establish the park.

The construction of the proposed tramway and the devastation of the wilderness status of the area have been contested bitterly by ski organizations, outdoor clubs, scientists, conservationists, and the various organizations of fishermen and hunters—all have united in asking for a chance to state publicly their objections to it. During all the years that the project has been under fire, there has never been a public hearing of any kind regarding it.



*You are invited
to the*

Audubon Camp of California

WHERE: At Sugar Bowl Lodge, Norden, Calif., close to Donner Summit and just off the main highway from Sacramento to Reno.

WHEN: Five 2-week sessions in the summer of 1950: June 18-July 1; July 2-July 15; July 16-July 29; July 30-August 12; August 13-August 26.

WHY: to demonstrate how fascinating, what fun it is to observe in the field, under expert leadership, the actions and functions of animals, plants, soil and water and their interrelationships; how essential to human welfare it is to apply to these resources knowledge of their wise use.

STAFF: Dr. Lloyd G. Ingles, Professor of Zoology at Fresno State College, will direct the camp. Staff is composed of experienced teachers, well-versed in camp life and natural history.

COST: \$85 fee covers 2-week session cost of tuition, board and lodging, as well as transportation on regularly scheduled field trips.

WRITE: Mrs. E. E. Richardson, 887 Indian Rock Avenue, Berkeley 7, California, for free prospectus.

NATIONAL AUDUBON SOCIETY
1000 Fifth Avenue • New York 28, N.Y.

Now the U. S. Forest Service has acceded to the demand and has scheduled the hearing at Riverside. We urge every organization interested to send a representative to this hearing. We urge every individual interested to be there if he possibly can. If personal appearance is impossible, then letters, petitions, etc., should be mailed in as suggested in the Forest Service notice.

The flora of Mount San Jacinto represents a meeting place of the alpine plants which have migrated southward via the Sierra Nevada and the Sierra Madre ranges and the northward and westward movement of desert forms from Mexico, New Mexico, and Arizona.

Five life zones completely encircle San Jacinto. And on the northeastern slopes, wholly within the state park, we have six life zones very much crowded together, from the Sonoran in Chino Canyon to the alpine on the top of San Jacinto (10,805 feet). The four upper zones of the mountain almost overlap one another. Dr. Hall stated: "There is probably no place in North America where the alpine and the Sonoran floras are in such proximity as they are on San Jacinto Mountain."—Guy L. Fleming, in the Sierra Club Bulletin, October 1949, quoting Harvey Monroe Hall, A Botanical Survey of San Jacinto Mountain (1902).



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tallest of all
trees—many are 350
feet high—some
are 2,000 years old.

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SAVE-THE-REDWOODS LEAGUE

250 Administration Building
University of California, Berkeley 4, Calif.

MARIN FLORA: *Manual of the Flowering Plants and Ferns of Marin County, California.* By John Thomas Howell, University of California Press, Berkeley and Los Angeles. 1949. vii + 322 pp.; maps; 25 full-page photographs by Charles T. Townsend. \$4.50.

Certain regions of the earth are considered remarkable for their native plant life. One of the "great" floras of the world is California's; and one small coastal county, Marin, appears to have a greater number of plant species than any other comparable part of the state intensively studied. Mr. Howell, the curator of botany in the California Academy of Sciences, needed no other excuse for writing a book on the flora of a 529-square mile area.

Though the bulk of his book is technical description by families, genera, and species, unillustrated, the 31

introductory pages plus the 24-page insert of beautiful photos of representative scenes make it a must for any nature-minded-in-the-broad-sense resident of Marin or, indeed, of the Bay Region. Here is as fine a word-and-picture description of a wonderfully varied landscape—from wild beaches to mountain tops—as one is likely to see, without panegyrics. A few of the Introduction's subjects: physiographic features; soils, climate and weather; life zone and plant associations (16 different ones are described, such as redwood forest, chaparral, mountain meadow, salt marshes, dunes and beaches); effect of fire; early botanical explorers—significant and highly interesting facts about the place where northern and southern coastal floras meet at their common barrier (not the Golden Gate but Marin's own Mount Tamalpais). D.G.K.

FROM THE READER (Continued from page 4)

The road across the mountains through Madera County is a Forest Service access road for the purpose of opening up some fine merchantable timber along the San Joaquin. Regional officers of the Forest Service tell me it is surveyed and nearly complete into the Chiquito Basin, and roughly surveyed on eastward to the Devil Postpile National Monument—crossing the range at Minaret Summit—and so out to U. S. 395.

Granting the logic of the Forest Service program of har-

vesting on a sustained yield basis the merchantable timber within its reserves (not designated as wild or primitive areas), it is still a source of regret to all wilderness lovers that a road must penetrate this fine wild country just south of Yosemite National Park. We seem to have no sound ground for opposition at this time to this project. There is a chance we should and could put up a good fight to limit the penetration of the road to the timber areas, and not allow it to become another cross-mountain highway. The Sierra Club is alerted on this and we are getting information.

If this road goes through it will be engineered for heavy logging trucks—which means 5 to 6 per cent grades and all the qualifications for an eventual fast highway. This will provide *three* trans-Sierra highways across the central portion of the range, all within a north-south distance of 52 miles—Sonora Pass (State Highway 108), Tioga, and the San Joaquin-Mammoth Lakes project. One, Tioga, goes right through the center of the Park. There is little justification I know of for any such development on the basis of present or foreseeable traffic; and returning to Tioga, it appears to me under the circumstances quite tragic that the Park should continue its gratuitous sacrifice—if and when the appropriations come through. H. C. BRADLEY
Berkeley, California, 12 March 1950.

The following were addressed to Dr. Bradley:

I read with interest your article . . . I wish to express agreement with your point of view in saving the Tioga Pass road as it now stands. The drive is one of the most inspiring I have made anywhere in the West and I can hardly wait for the opportunity to go back for some camping. Are letters to congressmen, etc., in order in the interest of your proposal?

R. W. SEVERANCE
University Librarian

Baylor University, Waco, 22 February 1950.

. . . *Pacific Discovery* . . . is indeed an attractive publication with unusually outstanding photographs. I hope it will be possible to place more and more emphasis on outdoor life—conservation. It seems to me that your timely article should do much to stimulate an appreciation of the natural beauty of the Yosemite country. EDWIN FRED

President

University of Wisconsin, Madison, 1 March 1950.

MARIN FLORA

A Manual of the Flowering Plants and Trees of Marin County, California

By JOHN THOMAS HOWELL



Describes 1,452 species and varieties of plants that are native or have become naturalized in Marin County, California, where strikingly diverse conditions from Mount Tamalpais west to the Pacific Ocean and east to San Francisco Bay exist within a small area. The Introduction presents a general description of the physical, geologic, and climatic features of the region. The author, John Thomas Howell, is curator of Botany at the California Academy of Sciences. 332 pages. \$4.50.

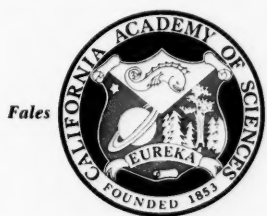
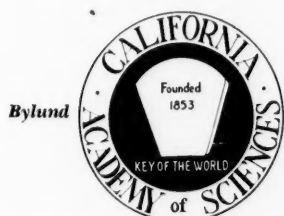
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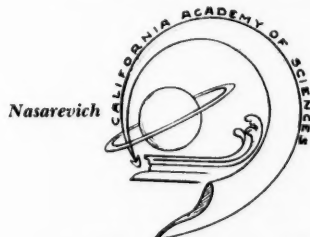
WINNERS IN THE SYMBOL CONTEST



Prizes were mailed last month to winners in the California Academy of Sciences symbol contest. Twelve designs were selected by the judges from a total of one hundred and fifty-seven entries. *First prize*, one hundred dollars, was awarded to Arthur Sundberg of San Francisco for a design which depicts the Academy buildings upon a globe, the upper half of which is celestial, the lower half terrestrial. *Second prize*, fifty dollars,



went to Norvel Lewis of Los Angeles. *Third prize*, twenty-five dollars, was won by Mrs. Emma Tose of Ross, California. Nine additional winners were awarded a year's subscription to *Pacific Discovery*, or if they were already subscribers, cash prizes of three dollars each. These winners were: Jenny Bylund, Los Angeles; Pat Fales, Los Angeles; D. G. Kelley, Mill Valley; Leo S. Nasarevich, Long Island, New York; Mr.



and Mrs. Lee Nutting of Berkeley who submitted a joint design; Rafael L. Rodriguez, Berkeley; Marion and Brooking Tatum of Burlingame who also sent a joint entry; Cecil Tose, Ross; Robert H. Weber, Natural Resources Section, SCAP, Japan, only overseas contestant. Distinguished among the entries were more than fifty submitted by students of design at Woodbury College, Los Angeles, which had been prepared as a class problem.



CALIFORNIA ACADEMY OF SCIENCES

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Signature Theme of "The Standard Hour" and the "Standard School Broadcast"

Words by
ADRIAN MICHAELIS

Music by
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